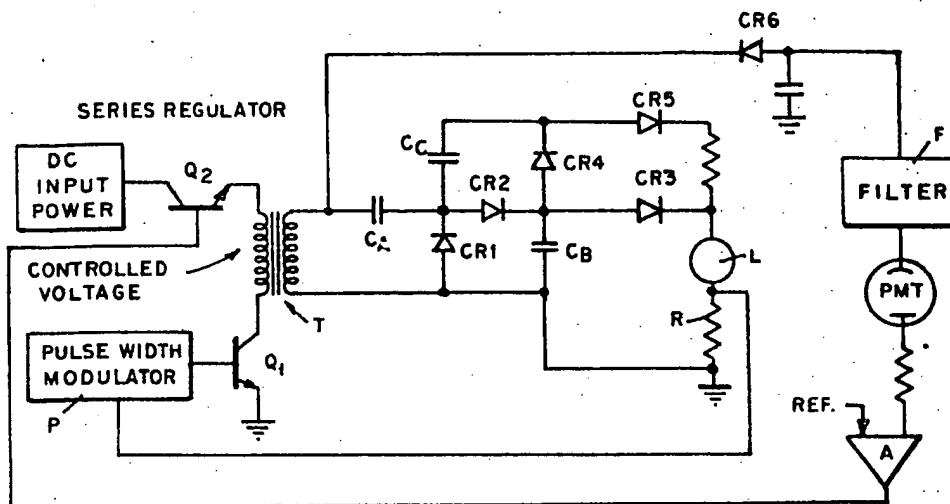


# PRIMARY REGULATED DUAL POWER SUPPLY

A. Halperin



A system using one high voltage transformer and one DC-to-DC converter is described which produces two feedback-controlled output voltages. The laser power supply operation is described in the IBM Technical Disclosure Bulletin 21, 2158-2159 (October 1978).

The capacitor  $C_A$  is charged in the forward mode and the capacitor  $C_B$  is charged in the flyback converter mode via rectifiers CR1 and CR2, respectively. Control of the power to the laser is by the pulse width modulator P which stores energy in the transformer field. Any changes in power input (voltage input) is compensated for by pulse width changes (stored energy changes). The photomultiplier tube (PMT) supply uses energy delivered during the forward operation mode only because rectifier diode CR6 blocks the voltage at the transformer T during the flyback period. The gain of the PMT is sensed, compared to a reference voltage, and fed back to the amplifier A which controls a series pass transistor Q2 (series regulator). The voltage at the transformer secondary during the forward converter mode of operation is proportional to the controlled DC voltage. The filter F in the high voltage line to the PMT reduces the ripple across the PMT. The filter F should be a capacitor input type so that the voltage is proportional to the peak voltage and not proportional to the pulse width.

The PMT supply voltage is proportional to the controlled DC

PRIMARY REGULATED DUAL POWER SUPPLY - Continued

voltage in the forward converter mode and is independent of the pulse width operation in the flyback converter mode.

The laser supply is dependent on the controlled DC voltage and the pulse width operation. The pulse width changes are controlled to compensate for DC input changes. In the laser supply, the flyback converter mode dominates.

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